

603.81	750 mm [30 in] Inlet Grate Unit	Each
603.82	900 mm [36 in] Inlet Grate Unit	Each

SECTION 604 - MANHOLES, INLETS, AND CATCH BASINS

604.01 Description Construct manholes, inlets, and catch basins.

604.02 Materials Materials shall meet the requirements specified in the following Sections of Division 700 - Materials:

Portland Cement	701.01
Clay or Shale Brick	704.01
Concrete Masonry Blocks	704.03
Joint Mortar	705.02
Reinforcing Steel	709.01
Stone Curbing and Edging	712.04
Precast Concrete Units	712.06

Except as otherwise provided on the plans, concrete for these structures shall meet the requirements of Section 502 - Structural Concrete.

Catch basin grates shall be either the type of grate shown on the Standard Details or an approved equal. The corners shall be notched by the Contractor at the project site by grinding the corner to fit the cast iron frames.

604.03 Construction Requirements Concrete catch basins and manholes shall be constructed of precast units, except that concrete blocks may be used around inlet and outlet pipes. Joints for precast concrete units shall be of portland cement mortar, rubber gaskets, flexible plastic rings, mastic joint filler or other approved types to form a watertight joint. Joints for concrete blocks shall be of portland cement mortar, not more than 12 mm [$\frac{1}{2}$ in] wide, completely filled and neatly tooled on the inside of the structure.

Metal catch basins shall be corrugated metal pipe units mounted on a portland cement concrete foundation.

Catch basins and manholes shall be placed to the required grade on a compacted foundation of uniform density. Inlet and outlet pipe elevations may vary from the elevations shown on the plans depending upon field conditions.

Pipe sections entering catch basins shall be firmly connected to the structure wall with no part of the pipe projecting more than 150 mm [6 in] inside the wall. When a section of culvert is cut, the end shall be finished in a skillful manner.

Metal frames and traps, when called for, shall be set in a bed of clay bricks or shale bricks and mortar, or otherwise secured as shown on the plans. Castings shall be set to the correct elevation before the next final course of paving material has been placed.

Upon completion, each catch basin and manhole shall be cleaned of all accumulation of silt, debris, or foreign matter and shall be kept clean until final acceptance of the work.

604.04 Altering, Adjusting, and Rebuilding Catch Basins and Manholes Existing catch basins and manholes shall be dismantled sufficiently to allow altering, adjusting, or rebuilding in accordance with the applicable requirements as shown on the Standard Detail plans for complete catch basins and manholes. When existing frames, covers, and grates are used, they shall be thoroughly cleaned of existing mortar before placing to the new grade.

a. Altering Catch Basin The existing top assembly shall be removed and replaced with a new Type A or Type B frame and special grate set to the required grade using approved clay brick and mortar.

b. Adjusting Catch Basins and Manholes The existing top assembly shall be removed, thoroughly cleaned, and reset to the new grade using approved clay brick and mortar.

c. Rebuilding Catch Basins and Manholes The existing top assembly, cone section, and barrel section shall be removed down to the outlet flow line grade to the extent required, as determined by the Resident, and shall be rebuilt and a new frame and grate furnished and installed at the required line and grade directed. Concrete blocks may be used to rebuild the barrel section, if necessary, due to existing conditions.

All salvaged material not reused, including grates, and frames, and curb inlets will remain the property of the present owner unless otherwise specified.

Each catch basin and manhole altered, adjusted, or reconstructed, shall be cleaned of all accumulated silt, debris, and other foreign matter before final acceptance of the work.

604.05 Method of Measurement Catch basins, manholes, and accessories of the respective types will be measured by the number of units, measured as follows, complete, and accepted in place.

a. Complete Structures Each catch basin and manhole having a depth up to 2.5 m [8 ft] from the top of the grate or cover to the top of the floor, measured to the nearest 0.5 m [ft], will be one unit. 1/5 of a unit [• of a unit] will be added for each additional 0.5 m [ft] over 2.5 m [8 ft] measured to the nearest 0.5 m [ft]. Depth measurements in excess of the dimensions authorized will not be included.

b. Existing Structures Existing catch basins and manholes to be altered, adjusted or rebuilt will be one unit each. Existing catch basins and manholes that are cleaned will be one unit each.

c. Trap Each trap included in the completed structure will be one unit each.

d. Step Each step included in the completed structure will be one unit each.

e. Grate Each grate altered under item 604.167 will be measured by each unit, complete in place and accepted.

604.06 Basis of Payment The accepted quantities of catch basins, manholes, altered grates, traps, and steps, will be paid for at the contract unit price each of the respective types complete in place. Payment for rebuilding, adjusting or altering catch basins and manholes shall include furnishing all materials including new blocks, bricks, mortar, metal tops, covers, and curb inlets when required. Frames, grates, and covers for new or rebuilt catch basins or manholes shall be considered part of the structure and no separate payment will be made. Payment for cleaning existing catch basins and manholes will be paid for at the contract unit price each. There will be no payment for cleaning new, altered, adjusted, or rebuilt catch basins and manholes. Payment will be full compensation for supplying all equipment and labor to clean the basins and manholes and to dispose of the waste.

Excavation and backfill will be measured and paid for as provided in Section 206 - Structural Excavation.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
604.072 Catch Basin Type A1-C	Each
604.082 Catch Basin Type A2-C	Each
604.09 Catch Basin Type B1	Each
604.092 Catch Basin Type B1-C	Each
604.10 Catch Basin Type B2	Each
604.102 Catch Basin Type B2-C	Each
604.11 Catch Basin Type C1	Each
604.12 Catch Basin Type C2	Each
604.13 600 mm [24 in] Catch Basin Type E	Each
604.14 750 mm [30 in] Catch Basin Type E	Each
604.15 Manhole	Each
604.16 Altering Catch Basin to Manhole	Each
604.161 Altering Catch Basin	Each
604.164 Rebuilding Catch Basin	Each
604.166 Rebuilding Manhole	Each
604.167 Alter Catch Basin Grate to Cascade Grate	Each
604.17 Altering Manhole to Catch Basin	Each
604.18 Adjusting Manhole or Catch Basin to Grade	Each
604.182 Cleaning Existing Catch Basin and Manhole	Each
604.19 200 mm [8 in] Trap	Each
604.20 300 mm [12 in] Trap	Each
604.21 375 mm [15 in] Trap	Each
604.22 450 mm [18 in] Trap	Each
604.23 Step	Each
604.242 Catch Basin Type F3	Each
604.243 Catch Basin Type F3-C	Each
604.244 Catch Basin Type F4	Each
604.245 Catch Basin Type F4-C	Each
604.246 Catch Basin Type F5	Each
604.247 Catch Basin Type F5-C	Each

604.248	Catch Basin Type F6	Each
604.249	Catch Basin Type F6-C	Each
604.25	Catch Basin Type A5	Each
604.252	Catch Basin Type A5-C	Each
604.26	Catch Basin Type B5	Each
604.262	Catch Basin Type B5-C	Each

SECTION 605 - UNDERDRAINS

605.01 Description This work shall consist of the construction of underdrain, using pipe and filter material and pipe outlets in accordance with these specifications and the standard detail plans and in reasonably close conformity with the lines and grades shown on the plans or established.

605.02 Materials. Materials shall meet the requirements specified in the following Sections of Division 700 - Materials:

Granular Borrow	703.19
Underdrain Backfill Material	703.22
<u>Underdrain Pipe</u>	
Corrugated Polyethylene Pipe	706.06
Polyvinylchloride (PVC) Perforated Pipe	706.09
Corrugated Steel, Metallic Coated Pipe for Underdrain	707.05
Corrugated Aluminum Alloy Pipe for Underdrain	707.08
<u>Underdrain Outlet Pipe</u>	
Corrugated Polyethylene Pipe	706.06
Corrugated Steel, Metallic Coated Pipe for Underdrain	707.02
Corrugated Aluminum Alloy Pipe	707.06

Connections for polyethylene pipe shall be made with external wrap-around split couplings, screw-on type couplings, external snap-on couplings, or bell and spigot and ring gasket. External wrap-around split couplings shall be secured with heavy duty splicing tape or plastic or wire ties placed on each side of the coupling. External snap-on couplings shall comply with the appropriate section of AASHTO Specifications.